



CERTIFICATION OF TRANSLATION

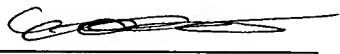
I, Wakako Anzai, residing at c/o SAKAI International Patent Office, 2-6,
Kasumigaseki 3-chome, Chiyoda-ku, Tokyo 100-0013 Japan,
state:

that I know well both the Japanese and English languages;

that I translated, from Japanese into English, the specification, claims and abstract as
filed in U.S. Patent Application No. 60/407,291, filed September 3, 2002; and

that the attached English translation is a true and accurate translation to the best of
my knowledge and belief.

Signature of Translator: _____


Wakako Anzai

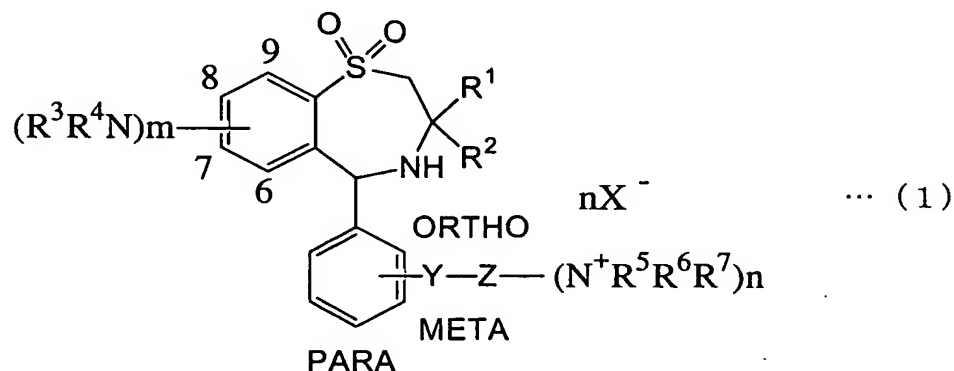
Date : December 26, 2003

[Title of the Invention] Novel quaternary ammonium compounds

[Scope of Claims for Patent]

[Claim 1] A compound represented by formula (1) below

[Chemical formula 1]



[wherein R^1 and R^2 , which may be mutually different, each represents an alkyl group having from 1 to 10 carbon atoms;

m represents an integer of 1 or 2, and R^3 and R^4 , which may be mutually different, each represents an alkyl group having from 1 to 5 carbon

atoms;

Y represents any one of $-NHCS-$, $-NHCSNH-$, and $-NHCSO-$; where the $-NH$ in the $-NHCS-$ represents a bond that links with an adjacent benzene ring and the $CS-$ in the $-NHCS-$ represents a bond that links with an adjacent Z , and the $-NH$ in the $-NHCSO-$ represents a bond that links with an adjacent benzene ring and the $CSO-$ in the $-NHCSO-$ represents a bond that links with an adjacent Z ;

$Z-(N^+R^5R^6R^7)_n$ represents an alkyl group or alkenyl group having from 2 to 10 carbon atoms that is substituted with n $(-N^+R^5R^6R^7)$ s, where at least one of methylenes that constitute Z may be replaced by any one of a

phenylene and an $-O-$; n is an integer of 1 or 2; and

$N^+R^5R^6R^7$ is any one of I), II), and III) below that are mutually independent;

- I) R^5 , R^6 , and R^7 may be mutually different and each represents an alkyl group, alkenyl group, or alkynyl group having from 1 to 10 carbon atoms, where the alkyl group, the alkenyl group, and the alkynyl group may be substituted with at least one of a phenyl group, a naphthyl group, a pyridyl group, a quinolyl group, a thienyl group, a furyl group, a piperidyl group, a pyrrolidyl group, a morpholyl group, a cycloalkyl group having from 3 to 7 carbon atoms, a cyano group, a nitro group, a hydroxyl group, an oxo group, a thioxo group, a carboxyl group, a $-CONH_2$ group, an $-SO_3H$ group, and further, at least one of methylenes that constitute the alkyl group, the alkenyl group, and the alkynyl group may be replaced by any one of a phenylene, a thienylene, a furylene, a cyclohexylene, a cyclopentylene, an $-O-$, an $-S-$, a $-CO_2-$, an $-NHCO-$, an $-NR^8-$, and an $-N^+W^-R^9R^{10}-$ where R^8 represents an alkyl group or alkenyl group having from 1 to 5 carbon atoms and the alkyl group and alkenyl group of R^8 may be substituted with at least one of a phenyl group, a cycloalkyl group having from 3 to 7 carbon atoms, and a hydroxyl group; R^9 and R^{10} , which may be mutually different, each represents an alkyl group or alkenyl group having from 1 to 5 carbon atoms and may be substituted with at least one of a phenyl group, a cycloalkyl group having from 3 to 7 carbon atoms, and a hydroxyl group; and W^- represents a counter anion,
- II) $N^+R^5R^6R^7$ represents a monocyclic ring or bicyclic ring that is formed by 4 to 9 carbon atoms in addition to an ammonium nitrogen atom, provided that the position of its bonding with Z is at the ammonium

nitrogen atom, where one of the carbon atoms that constitute the ring in the monocyclic ring and bicyclic ring may be replaced by any one atom of oxygen, nitrogen, and sulfur, and further, the monocyclic ring and the bicyclic ring may be substituted with at least one of a hydroxyl group, an oxo group, a thioxo group, a cyano group, a phenyl group, a naphthyl group, a thienyl group, a pyridyl group, a cycloalkyl group having from 3 to 7 carbon atoms, a carboxyl group, a $-\text{CONH}_2$ group, an $-\text{SO}_3\text{H}$ group, and an $-\text{R}^{11}$ group; R^{11} represents an alkyl group or alkenyl group having from 1 to 8 carbon atoms, where the alkyl group and the alkenyl group represented by R^{11} may be substituted with at least one of a phenyl group, a naphthyl group, a pyridyl group, a quinolyl group, a thienyl group, a furyl group, a piperidyl group, a pyrrolidyl group, a morpholyl group, a cycloalkyl group having from 3 to 7 carbon atoms, a cyano group, a nitro group, a hydroxyl group, an oxo group, a thioxo group, a carboxyl group, a $-\text{CONH}_2$ group, and an $-\text{SO}_3\text{H}$ group; further, at least one of methylenes that constitute the alkyl group and the alkenyl group may be replaced by any one of a phenylene, a thienylene, a furylene, a cyclohexylene, a cyclopentylene, an $-\text{O}-$, an $-\text{S}-$, a $-\text{CO}_2-$, an $\text{NHCO}-$, an $-\text{NR}^8-$, and an $-\text{N}^+\text{W}^-\text{R}^9\text{R}^{10}-$, where R^8 , R^9 , R^{10} , and W^- are as described above; among R^5 , R^6 , and R^7 , those groups that are not involved in formation of the monocyclic ring and the bicyclic ring are the same as those in I) described above,

III) $\text{N}^+\text{R}^5\text{R}^6\text{R}^7$ represents a pyridinium ring, a quinolinium ring, or an isoquinolinium ring, provided that the position of its bonding with Z is at the ammonium nitrogen atom; the pyridinium ring, the quinolinium ring,

and the isoquinolinium ring may be substituted with at least one of a cyano group, a nitro group, a phenyl group, a naphthyl group, a thienyl group, a pyridyl group, a cycloalkyl group having from 3 to 7 carbon atoms, an alkoxy group having from 1 to 5 carbon atoms, a carboxyl group, a -CONH₂ group, an -SO₃H group, and an -R¹² group where R¹² represents an alkyl group or alkenyl group having from 1 to 9 carbon atoms; and the alkyl group and the alkenyl group represented by R¹² may be substituted with at least one of a phenyl group, a naphthyl group, a pyridyl group, a quinolyl group, a thienyl group, a furyl group, a cycloalkyl group having from 3 to 7 carbon atoms, a cyano group, a nitro group, a hydroxyl group, an oxo group, a thioxo group, a carboxyl group, a -CONH₂ group, and an -SO₃H group; and further, at least one of methylenes that constitute the alkyl group and the alkenyl group may be replaced by any one of a phenylene, a thienylene, a furylene, a cyclohexylene, a cyclopentylene, an -S-, a -CO₂-, an -NHCO-, an -NR⁸-, and an -N⁺W⁻R⁹R¹⁰-, where R⁸, R⁹, R¹⁰, and W⁻ are as described above and X⁻ represents a counter anion].

[Claim 2] The compound according to claim 1, wherein Z-(N⁺R⁵R⁶R⁷)_n represents an alkyl group having from 2 to 10 carbon atoms that is substituted with n (-N⁺R⁵R⁶R⁷)s and one of methylenes that constitute Z may be replaced by any one of a phenylene and an -O-.

[Claim 3] The compound according to claim 2, wherein Z-(N⁺R⁵R⁶R⁷)_n represents an alkyl group having from 2 to 10 carbon atoms that is substituted with one -N⁺R⁵R⁶R⁷ and at least one of methylenes that constitute Z may be replaced by any one of a phenylene

and an -O-.

[Claim 4] The compound according to claim 3, wherein
Z-(N⁺R⁵R⁶R⁷)_n represents a straight chain alkyl group having from 2 to 10
carbon atoms that is substituted with one -N⁺R⁵R⁶R⁷, a straight chain
5 alkyl group having from 2 to 10 carbon atoms that is substituted with one
-N⁺R⁵R⁶R⁷ where one of methylenes that constitute Z is replaced by a
phenylene, a straight chain alkyl group having from 2 to 10 carbon atoms
that is substituted with one -N⁺R⁵R⁶R⁷ where one of methylenes that
constitute Z is replaced by an -O-, or a straight chain alkyl group having
10 from 2 to 10 carbon atoms that is substituted with one -N⁺R⁵R⁶R⁷ where
one of methylenes that constitute Z is replaced by a phenylene and
another methylene is replaced by an -O-.

[Claim 5] The compound according to claim 4, wherein Z
represents a straight chain methylene group having from 2 to 10 carbon
15 atoms, a straight chain methylene group having from 2 to 10 carbon
atoms where one methylene is replaced by a phenylene, a straight chain
methylene group having from 2 to 10 carbon atoms where one methylene
is replaced by an -O-, or a straight chain methylene group having from 2
to 10 carbon atoms where one methylene is replaced by a phenylene and
20 another methylene is replaced by an -O-.

[Claim 6] The compound according to claim 5, wherein Z
represents a straight chain methylene group having from 2 to 10 carbon
atoms.

[Claim 7] The compound according to claim 5, wherein Y
25 represents -NHCS- or -NHCSNH- at the para-position or meta-position.

[Claim 8] The compound according to claim 6, wherein Y represents -NHCS- or -NHCSNH- at the para-position or meta-position.

[Claim 9] The compound according to claim 8, wherein Y represents an -NHCSNH- at the meta-position and Z represents a straight
5 chain methylene group having from 2 to 10 carbon atoms.

[Claim 10] The compound according to claim 8, wherein Y represents an -NHCS- at the meta-position and Z represents a straight chain methylene group having from 2 to 10 carbon atoms.

[Claim 11] The compound according to any one of claims 1 to 10,
10 wherein $N^+R^5R^6R^7$ is any one of I), II), and III) below that are independent
I) R^5 , R^6 , and R^7 , which may be mutually different, each represents an alkyl group having from 1 to 10 carbon atoms, an alkenyl group having from 3 to 8 carbon atoms, and an alkynyl group having from 3 to 9 carbon atoms where the alkyl group, the alkenyl group, and the alkynyl group
15 may be substituted with at least one of a phenyl group, a thienyl group, a cyclohexyl group, a cyano group, a hydroxyl group, an oxo group, a carboxyl group, a -CONH₂ group, and an -SO₃H group, and further, at least one of methylenes that constitute the alkyl group, the alkenyl group, and the alkynyl group may be replaced by any one of a phenylene, a
20 thienylene, a furylene, an -O-, a -CO₂-, an -NHCO-, an -NR⁸-, and an -N⁺W⁻R⁹R¹⁰- where R⁸ represents an alkyl group having from 1 to 3 carbon atoms or an alkenyl group having 3 carbon atoms and the alkyl group may be substituted with at least one of a phenyl group and a hydroxyl group; R⁹ and R¹⁰, which may be mutually different, each
25 represents an alkyl group having from 1 to 3 carbon atoms or an alkenyl

group having 3 carbon atoms, and the alkyl group may be substituted with at least one of a phenyl group and a hydroxyl group,

II) $N^+R^5R^6R^7$ represents a monocyclic ring or bicyclic ring that is any one of a pyrrolidinium ring, a piperidinium ring, a morpholinium ring, a thiomorpholinium ring, a piperazinium ring, an azepanium ring, a quinuclidinium ring, and a 1,4-diazabicyclo[2.2.2]octanium ring provided that the position of its bonding with Z is at the ammonium nitrogen atom; the monocyclic ring and the bicyclic ring may be substituted with at least one of a hydroxyl group, an oxo group, a cyano group, a phenyl group, a -CONH₂ group, and an -R¹¹ group; R¹¹ represents an alkyl group having from 1 to 6 carbon atoms or an alkenyl group having 3 carbon atoms where the alkyl group represented by R¹¹ may be substituted with at least one of a hydroxyl group, a cyano group, a phenyl group, and a -CONH₂ group, and further at least one of methylenes that constitute the alkyl group may be replaced by any one of an -O-, a -CO₂-, and an -NHCO-; a group among R⁵, R⁶, and R⁷ that is not involved in formation of the ring represents an alkyl group having from 1 to 6 carbon atoms, an alkenyl group having from 3 to 4 carbon atoms, or an alkynyl group having from 3 to 6 carbon atoms; the alkyl group, the alkenyl group, and the alkynyl group represented by R⁵, R⁶, and R⁷ may be substituted with at least one of a phenyl group, a thienyl group, a furyl group, a piperidyl group, a pyrrolidyl group, a morpholyl group, a cyclopropyl group, a cyclopentyl group, a cyano group, a hydroxyl group, an oxo group, a nitro group, a carboxyl group, a -CONH₂ group, and an -SO₃H group; and further, at least one of methylenes that constitute the alkyl group may be replaced

by any one of a phenylene, an -O-, and a -CO₂-,

III) N⁺R⁵R⁶R⁷ represents a pyridinium ring, a quinolinium ring, or an isoquinolinium ring, provided that the position of its bonding with Z is at the ammonium nitrogen atom; the pyridinium ring and the quinolinium ring
5 may be substituted with at least one of a cyano group, a nitro group, a phenyl group, a thienyl group, a pyridyl group, an alkoxy group having from 1 to 3 carbon atoms, a carboxyl group, a -CONH₂ group, and an -R¹² group where R¹² represents an alkyl group having from 1 to 9 carbon atoms or an alkenyl group having from 2 to 4 carbon atoms, and the alkyl
10 group and the alkenyl group represented by R¹² may be substituted with at least one of a phenyl group, a naphthyl group, a pyridyl group, a cyano group, a nitro group, an hydroxyl group, an oxo group, a carboxyl group, and an -SO₃H group; and further, at least one of methylenes that constitute the alkyl group and the alkenyl group may be replaced by any
15 one of an -S-, a -CO₂-, an -NHCO-, and an -NR⁸-; where R⁸ represents an alkyl group having from 1 to 3 carbon atoms, and the alkyl group may be substituted with at least one hydroxyl group.

[Claim 12] The compound according to any one of claims 1 to 10, wherein N⁺R⁵R⁶R⁷ is any one of I), II), and III) below that are independent
20 I) R⁵, R⁶, and R⁷, which may be mutually different, each represents a straight chain alkyl group having from 1 to 10 carbon atoms, a straight chain alkenyl group having from 3 to 6, or 8 carbon atoms, a branched alkenyl group having 4, 6, or 7 carbon atoms, a straight chain alkynyl group having 3, 5, 6, 7, or 9 carbon atoms, and a branched alkynyl group
25 having 6 carbon atoms; 1) the alkyl group, the alkenyl group, and the

alkynyl group represented by R^5 , R^6 , and R^7 are substituted with any one of a phenyl group, a thienyl group, a cyclohexyl group, a cyano group, a hydroxyl group, an oxo group, a carboxyl group, a $-CONH_2$ group, and an $-SO_3H$ group, 2) the alkyl group, the alkenyl group, and the alkynyl group are substituted with two hydroxyl groups, 3) the alkyl group, the alkenyl group, and the alkynyl group are substituted with one hydroxyl group and one $-SO_3H$ group, 4) the alkyl group, the alkenyl group, and the alkynyl group are substituted with one oxo group and one phenyl group, 5) the alkyl group, the alkenyl group, and the alkynyl group are substituted with one hydroxyl group and two phenyl groups, 6) one of methylenes that constitute the alkyl group, the alkenyl group, and the alkynyl group is replaced by any one of a phenylene, a furylene, a $-CO_2-$, an $-NHCO-$, an $-NR^8-$ (provided that R^8 represents any one of a methyl group, an ethyl group, an n-propyl group, a 2-propenyl group, a 2-hydroxyethyl group, a 2-hydroxypropyl group, and a benzyl group), and an $-N^+W^-R^9R^{10}-$ (provided that R^9 and R^{10} represent any one of a methyl group, an ethyl group, an n-propyl group, a 2-propenyl group, a 2-hydroxyethyl group, and a benzyl group), 7) two of methylenes that constitute the alkyl group, the alkenyl group, and the alkynyl group are replaced by any one selected from two $(-O-)$ s, one phenylene and one $-O-$, one $-O-$ and one $-NR^8-$, or one $-NHCO-$, and one $-O-$, 8) three of methylenes that constitute the alkyl group, the alkenyl group, and the alkynyl group are replaced by any one selected from two $(-O-)$ s and one $-NR^8-$, or one phenylene and two $(-NHCO-)$ s, 9) the alkyl group, the alkenyl group, and the alkynyl group are substituted with one hydroxyl group and further, one

of methylenes that constitute the alkyl group, the alkenyl group, and the
alkynyl group is replaced by an -O-, 10) the alkyl group, the alkenyl group,
and the alkynyl group are substituted with one hydroxyl group and further,
one of methylenes that constitute the alkyl group, the alkenyl group, and
5 the alkynyl group is replaced by an -NR⁸-, 11) the alkyl group, the alkenyl
group, and the alkynyl group are substituted with one hydroxyl group and
further, one of methylenes that constitute the alkyl group, the alkenyl
group, and the alkynyl group is replaced by a furylene, 12) the alkyl group,
the alkenyl group, and the alkynyl group are substituted with one oxo
10 group and further, one of methylenes that constitute the alkyl group, the
alkenyl group, and the alkynyl group is replaced by a thienylene, or 13)
the alkyl group, the alkenyl group, and the alkynyl group are substituted
with one oxo group and further, two of methylenes that constitute the alkyl
group, the alkenyl group, and the alkynyl group are replaced by one -O-
15 and one phenylene; or the alkyl group, the alkenyl group, and the alkynyl
group are neither substituted nor replaced,
II) N⁺R⁵R⁶R⁷ represents a monocyclic ring or bicyclic ring that is any one
of a pyrrolidinium ring, a piperidinium ring, a morpholinium ring, a
thiomorpholinium ring, a piperazinium ring, an azepanium ring, a
20 quinuclidinium ring, and a 4-diazabicyclo[2.2.2]octanium ring, provided
that the position of its bonding with Z is at the ammonium nitrogen atom;
the monocyclic ring and the bicyclic ring 1) are substituted with any one
of a hydroxyl group, an oxo group, a cyano group, a phenyl group, a
-CONH₂ group, and an -R¹¹ group, 2) are substituted with one cyano
25 group and one hydroxyl group, 3) are substituted with one hydroxyl group

and one R^{11} , 4) are substituted with one oxo group and one R^{11} , 5) are substituted with two oxo groups, or 6) are substituted with two (R^{11})s, or the monocyclic ring and bicyclic ring are unsubstituted, where R^{11} represents any one of a methyl group, an ethyl group, an n-propyl group, an n-butyl group, an n-pentyl group, a 2-propenyl group, a benzyl group, an acetamino group, a t-butoxycarbonylamino group, a hydroxymethyl group, a 2-hydroxyethyl group, a 3-hydroxypropyl group, a 2-cyanoethoxy group, a (2-cyanoethoxy)methyl group, a 2-carbamoylethoxy group, an ethoxycarbonyl group, a t-butoxycarbonyl group, a benzoyloxy group, a phenylacetamino group, a butanoylamino group, and a pentanoylamino group; a group among R^5 , R^6 , and R^7 that is not involved in formation of the ring, represents a straight chain alkyl group having from 1 to 6 carbon atoms, and a straight chain alkenyl group having from 3 to 4 carbon atoms, and a straight chain alkynyl group having 3, 4, or 6 carbon atoms; 1) the alkyl group, the alkenyl group, and the alkynyl group represented by R^5 , R^6 , and R^7 are substituted with any one of a phenyl group, a thienyl group, a furyl group, a piperidyl group, a pyrrolidyl group, a morpholyl group, a cyclopropyl group, a cyclopentyl group, a cyano group, a hydroxyl group, a carboxyl group, and an $-SO_3H$ group, 2) the alkyl group, the alkenyl group, and the alkynyl group are substituted with two hydroxyl groups, 3) the alkyl group, the alkenyl group, and the alkynyl group are substituted with one hydroxyl group and one $-SO_3H$ group, 4) the alkyl group, the alkenyl group, and the alkynyl group are substituted with four hydroxyl groups and one oxo group, 5) the alkyl group, the alkenyl group, and the alkynyl group are substituted with one nitro group

and one morphonyl group, 6) one of methylenes that constitute the alkyl group, the alkenyl group, and the alkenyl group is replaced by a $-\text{CO}_2-$; or 7) the alkyl group, the alkenyl group, and the alkynyl group are substituted with one morpholyl group, and further, one of methylenes that

5 constitute the alkyl group, the alkenyl group, and the alkynyl group is replaced by an $-\text{O}-$; or the alkyl group, the alkenyl group and the alkynyl group are neither substituted nor replaced,

III) $\text{N}^+\text{R}^5\text{R}^6\text{R}^7$ represents any one of 1) a pyridinium ring substituted with any one of a cyano group, a phenyl group, a thienyl group, a pyridyl

10 group, a methoxy group, an ethoxy group, a propoxy group, a carboxyl group, a $-\text{CONH}_2$ group, and an $-\text{R}^{12}$ group, 2) a pyridinium ring substituted with two cyano groups, 3) a pyridinium ring substituted with two $(-\text{R}^{12})$ s, 4) a pyridinium ring substituted with one cyano group and one $-\text{R}^{12}$, 5) a pyridinium ring substituted with one phenyl group and one

15 $-\text{R}^{12}$, 6) a quinolinium ring substituted with any one of a cyano group, a nitro group, a carboxyl group, a methoxy group, an ethoxy group, a propoxy group, and an $-\text{R}^{12}$, 7) a quinolinium ring substituted with one methoxy group and one $-\text{R}^{12}$, 8) a quinolinium ring substituted with one nitro group and one $-\text{R}^{12}$, 9) an unsubstituted pyridinium ring, 10) an

20 unsubstituted quinolinium ring, and 11) an unsubstituted isoquinolinium ring, where R^{12} represents any one of a methyl group, an ethyl group, an n-propyl group, an i-propyl group, an n-butyl group, a t-butyl group, an n-pentyl group, a 3-pentyl group, a 5-nonyl group, a vinyl group, a benzyl group, a 3-phenylpropyl group, a 2-(1-naphthyl)vinyl group, a

25 hydroxymethyl group, a 2-hydroxyethyl group, a 3-hydroxypropyl group, a

formyl group, an acetyl group, a propionyl group, a benzoyl group, a methoxycarbonyl group, an ethoxycarbonyl group, a butoxycarbonyl group, a hexoxycarbonyl group, a benzyloxycarbonyl group, a 2-propenyloxycarbonyl group, an ethoxycarbonylmethyl group, a
5 2-(methoxycarbonyl)ethyl group, an ethoxycarbonylmethylcarbonyl group, a 2-hydroxyethylaminocarbonyl group, a bis(2-hydroxyethyl)aminocarbonyl group, a 2-carboxyvinyl group, a carboxymethylthio group, a cyanomethyl group, a 2-nitrovinyl group, a 2-(4-pyridyl)ethyl group, a 2-(4-pyridyl)vinyl group, a 3-(4-pyridyl)propyl
10 group, a 2-(4-pyridyl)-1,2-dihydroxyethyl group, and a 2-sulfoethyl group, provided that the position of its bonding with Z is at the ammonium nitrogen atom.

[Claim 13] The compound according to any one of claims 1 to 10, wherein $N^+R^5R^6R^7$ is any one of I), II), and III) below that are
15 independent;

I) R^5 , R^6 , and R^7 , which may be mutually different, each represents any one of a straight chain alkyl group having from 1 to 10 carbon atoms, a straight chain alkyl group having from 1 to 10 carbon atoms substituted with one phenyl group, a straight chain alkyl group having from 1 to 10
20 carbon atoms substituted with one hydroxyl group, a straight chain alkenyl group having from 3 to 6, or 8 carbon atoms, a branched alkenyl group having 4, 6, or 7 carbon atoms, a straight chain alkynyl group having 3, 5, 6, 7, or 9 carbon atoms, and a branched alkynyl group having 6 carbon atoms,

25 II) $N^+R^5R^6R^7$ represents a pyrrolidinium ring, a piperidinium ring, an

azepanium ring, a quinuclidinium ring, or a
 1,4-diazabicyclo[2.2.2]octanium ring, substituted with any one of a methyl
 group, an ethyl group, an n-propyl group, an n-butyl group, an n-pentyl
 group, a 2-propenyl group, a benzyl group, a hydroxyl group, a
 5 hydroxymethyl group, a 2-hydroxyethyl group, a 3-hydroxypropyl group,
 or unsubstituted, provided that the position of its bonding with Z is at the
 ammonium nitrogen atom; a group among R^5 , R^6 , and R^7 that is not
 involved in formation of the ring represents any one of a straight chain
 alkyl group having from 1 to 6 carbon atoms, a straight chain alkyl group
 10 having from 1 to 6 carbon atoms substituted with one phenyl group, a
 straight chain alkyl group having from 1 to 6 carbon atoms substituted
 with one hydroxyl group, a straight chain alkenyl group having from 3 to 4
 carbon atoms, and a straight chain alkynyl group having from 3, 4, or 6
 carbon atoms,
 15 III) $N^+R^5R^6R^7$ represents any one of an unsubstituted pyridinium ring, an
 unsubstituted quinolinium ring, an unsubstituted isoquinolinium ring, a
 pyridinium ring substituted with any one of a methyl group, an ethyl group,
 an n-propyl group, an i-propyl group, an n-butyl group, a t-butyl group, an
 n-pentyl group, a vinyl group, a phenyl group, a benzyl group, a
 20 3-phenylpropyl group, a hydroxymethyl group, a 2-hydroxyethyl group,
 and a 3-hydroxypropyl group, a pyridinium ring substituted with any one
 selected from two methyl groups or two ethyl groups, a pyridinium ring
 substituted with one phenyl group and one methyl group, and a
 quinolinium ring substituted with any one of a methyl group and an
 25 i-propyl group, provided that the position of its bonding with Z is at the

ammonium nitrogen atom.

[Claim 14] The compound according to claim 11, wherein R^1 and R^2 , which may be mutually different, each represents a straight chain alkyl group having from 2 to 6 carbon atoms, and $(NR^3R^4)_m$ represents
5 any one of a dimethylamino group that substitutes at the 7-position, a diethylamino group that substitutes at the 7-position, an ethylmethylamino group that substitutes at the 7-position, a dimethylamino group that substitutes at the 9-position, and dimethyl amino groups that substitute at two positions consisting of the 7-position and the 9-position.

10 [Claim 15] The compound according to claim 12, wherein R^1 and R^2 , which may be mutually different, each represents a straight chain alkyl group having from 2 to 6 carbon atoms, and $(NR^3R^4)_m$ represents any one of a dimethylamino group that substitutes at the 7-position, a diethylamino group that substitutes at the 7-position, an ethylmethylamino
15 group that substitutes at the 7-position, a dimethylamino group that substitutes at the 9-position, and dimethyl amino groups that substitute at two positions consisting of the 7-position and the 9-position.

[Claim 16] The compound according to claim 13, wherein R^1 and R^2 , which may be mutually different, each represents a straight chain
20 alkyl group having from 2 to 6 carbon atoms, and $(NR^3R^4)_m$ represents any one of a dimethylamino group that substitutes at the 7-position, a diethylamino group that substitutes at the 7-position, an ethylmethylamino group that substitutes at the 7-position, a dimethylamino group that substitutes at the 9-position, and dimethyl amino groups that substitute at
25 two positions consisting of the 7-position and the 9-position.

[Claim 17] A pharmaceutical composition that comprises the compound described in claim 1 as an active ingredient.

[Claim 18] The pharmaceutical composition according to claim 17, which is a cholesterol-lowering agent.

5 [Claim 19] The pharmaceutical composition according to claim 18, which is a therapeutic or prophylactic agent for any one of hyperlipidemia, arteriosclerosis, and syndrome X.

[Claim 20] The pharmaceutical composition according to claim 17, which is a therapeutic or prophylactic agent for hepatopathy caused
10 by cholestasis.

[Claim 21] The pharmaceutical composition according to claim 20, which is a therapeutic or prophylactic agent for any one of primary biliary cirrhosis and primary sclerosing cholangitis.

[Claim 22] The pharmaceutical composition according to claim
15 17, which is a therapeutic or prophylactic agent for any one of obesity and fatty liver.